

Date: Fri, 7 Oct 94 04:30:23 PDT  
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>  
Errors-To: Ham-Homebrew-Errors@UCSD.Edu  
Reply-To: Ham-Homebrew@UCSD.Edu  
Precedence: List  
Subject: Ham-Homebrew Digest V94 #296  
To: Ham-Homebrew

Ham-Homebrew Digest                      Fri, 7 Oct 94                      Volume 94 : Issue 296

Today's Topics:

    Building a good directional coupler for VHF/UHF? (2 msgs)  
        Favorite input circuit for freq. counter?  
            Need 71488A for Atlas HF  
            Siemens Mixer datasheet  
    Silver solder for SMT? (Was: Reuse surface mount parts?)

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>  
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: Wed, 5 Oct 1994 17:18:29 GMT  
From: jdc@cci.com (James D. Cronin)  
Subject: Building a good directional coupler for VHF/UHF?

I'd like to build a directional coupler for VHF and UHF power and SWR  
measurements. The ARRL Handbook has a project using copper tubing and  
a 'T' fitting. My Radio Shack SWR meter uses an etched PC board, while  
another SWR meter uses metal rods in a plastic holder.

Is there any advantage of one over another? Does the PC board version  
show impedance 'bumps' from being in one plane, as opposed to the  
copper-tubing version? Will RF radiate from the PC board? It certainly  
looks like the easiest to make, but is it any good?

73...Jim N2VNO

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Date: Wed, 5 Oct 1994 20:30:09 GMT  
From: zlau@arrl.org (Zack Lau (KH6CP))  
Subject: Building a good directional coupler for VHF/UHF?

James D. Cronin N2VNO (jdc@cci.com) wrote:

: I'd like to build a directional coupler for VHF and UHF power and SWR  
: measurements. The ARRL Handbook has a project using copper tubing and  
: a 'T' fitting. My Radio Shack SWR meter uses an etched PC board, while  
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: show impedance 'bumps' from being in one plane, as opposed to the  
: copper-tubing version? Will RF radiate from the PC board? It certainly  
: looks like the easiest to make, but is it any good?

Yes, the plumbing construction offers low loss, a definite advantage  
if you intend to run high power or don't want to lose receiver sensitivity  
by having something lossy in the transmission line.

--

Zack Lau KH6CP/1                    2 way QRP WAS  
                                    8 States on 10 GHz  
Internet: zlau@arrl.org    10 grids on 2304 MHz

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Date: 6 Oct 1994 03:22:13 GMT  
From: rkarlqu@scd.hp.com (Richard Karlquist)  
Subject: Favorite input circuit for freq. counter?

In article <36u2qk\$puh@usenet.ins.cwru.edu>,  
Stephen C. Trier <sct@po.cwru.edu> wrote:

>I'm working on homebrewing a frequency counter around an ICM7216.  
>The current challenge is finding a good input circuit. For HF,  
>capacitively coupling into a 74HC gate looks good. For higher  
>frequencies, I'd like to use a 74F prescaler, which offers questions  
>of its own. Should I square up the input and boost the input  
>capacitance with, say, a JFET preamp?

>  
>What's your favorite input circuit for frequency counting?

>  
>                Stephen

>  
>--

>Stephen Trier            "Idiosyncratically euphuistic eccentricities are the  
>sct@po.cwru.edu        promulgators of titurable obfuscation. What did you  
>KG8IH                    do last night? Enter into a meaningful romantic  
>                    involvement or fall in love?" -- United Technologies

Here at the HP Santa Clara Division where frequency counters are made, the normal way of doing that is to use a high speed comparator such as the AM686 (or its variations). You can use a 10H350 to convert from ECL to TTL if necessary.

To get high input impedance to use a scope probe, a source follower is switched in ahead of the comparator. A BF980 or similar makes a good source follower.

Rick Karlquist (designer of the HP 5334B frequency counter)  
rkarlqu@scd.hp.com

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Date: Thu, 6 Oct 1994 09:43:09 GMT  
From: jacques.choquette@takeone.com (Jacques Choquette)  
Subject: Need 71488A for Atlas HF

I recently purchased this fine rig - Atlas 210X - which came with the VOX and digital display external units. While using it for a special event station the display quit. Troubleshooting brought it down to the decoder chips. Problems is none of the electronic shops in town (Ottawa) or RF Parts in California could help me. The set was manufactured in 1977 and it seems chips that old are hard/impossible to get. So wondering if anyone here could have some for sale or give me a place to call to get/order some. Required is quantity (2) 74188A or 74LS188 chips. Thank you in advance for helping out, Jacques.  
Also available on packet VE3TSC @ VE3KYT.

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Date: 6 Oct 94 22:02:30 GMT  
From: dshalita@rogue.COM (David Shalita)  
Subject: Siemens Mixer datasheet

Can someone possibly send me a datasheet for an old Siemens mixer IC. Looking for SO-42P, now obsolete and no datasheets available per USA Siemens folks.

Please send to  
David Shalita  
7833 Cantaloupe Ave  
Van Nuys, CA 91402

Need input impedance to mixer port and output port impedance.

Thanks, desperate,  
73 Dave,

w6mik

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Internet : dshalita@rogue.com  
AMPR.ORG :lp.w6mik.ampr.org [44.16.0.29]  
AMPR.ORG :w6mik.ampr.org [44.16.0.26]  
7833 Cantaloupe Ave. Van Nuys, CA 91402

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Date: Wed, 5 Oct 1994 12:36:39 +0000  
From: G3SEK@ifwtech.demon.co.uk (Ian G3SEK)  
Subject: Silver solder for SMT? (Was: Reuse surface mount parts?)

In article: <CwyJsy.M34@srgenprp.sr.hp.com> alanb@hpnmarb.sr.hp.com (Alan Bloom) writes:

>  
> I guess it's my destiny in life to quash old-wife's tales on the Internet:  
>  
> ... quotes from previous articles in thread: Reuse surface mount parts?  
>  
>  
> Just to be sure I wouldn't lead anyone astray, I checked with the  
> surface-mount technology expert here at work about soldering SMT devices.  
> He said that:  
>  
> 1. Standard tin-lead solder is used universally throughout the industry.  
> 2. Nearly all modern SMT devices are solder-dipped. (i.e. no silver)  
> 3. Of the few SMT devices that do have a silver plating, they add  
> palladium to the silver to improve solderability. Yes, some of the  
> plating does leach into the solder, but that only improves the joint.  
>  
> I suspect the myth of using silver solder started back in the old days,  
> when chip components were not used on PC boards, but in microcircuits.  
>  
> AL N1AL  
>

Please remember that the original thread was about \*re-using\* SM parts. The industry uses ordinary tin-lead for assembly, and SMDs are naturally designed with this once-only soldering operation in mind. But re-working of SMD boards and the re-use of parts brings in new considerations.

Here's an extract from the data on a grade of solder recommended for SMD rework (from the British RS catalog):

"LOW MELTING POINT

A grade of solder with composition 62% tin, 36% lead, 2% silver, which exhibits a very sharp (eutectic) melting transition... at 179C. The [low

melting point] feature is useful when repairs on fabricated boards are required; by careful temperature control component displacement and thermal damage can be minimized.

The alloy is also exceptional in its wetting/flow capabilities and the silver content also prevents leaching when soldering to silver or gold plated surfaces, thereby preventing embrittlement...

The 24 and 26 swg wire [22 and 24 AWG] is ideal for repair/rework of surface mount boards."

So there are actually \*three\* features here: the low melting point, the superior wetting properties, and also the avoidance of leaching in those components that are prone to it.

Maybe Al is right: it could well be that the leaching feature is the least important of the three.

In practice the components that give most trouble are chip caps, which are generally the passive components we most want to recycle. I've certainly found that the low-melting silver-bearing solder helps with these - the "superior wetting" claim does seem to be true.

Obviously you need to suck away as much ordinary tin-lead as possible from the joint area first, and clean the bit of the iron before changing solders. Otherwise you're still working with mostly plain tin-lead.

Since the 62/36/2% composition has a uniquely low and sharp melting point, I'm sure it must be available in the USA and in other countries too.

But don't just ask for "silver-bearing solder". There's also a grade of tin-lead-silver solder with an exceptionally \*high\* melting point!

73 from Ian G3SEK	Editor, _The_VHF/UHF_DX_Book_
Abingdon, England	
g3sek@ifwtech.demon.co.uk	"In Practice" columnist for RadCom (RSGB)

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End of Ham-Homebrew Digest V94 #296

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